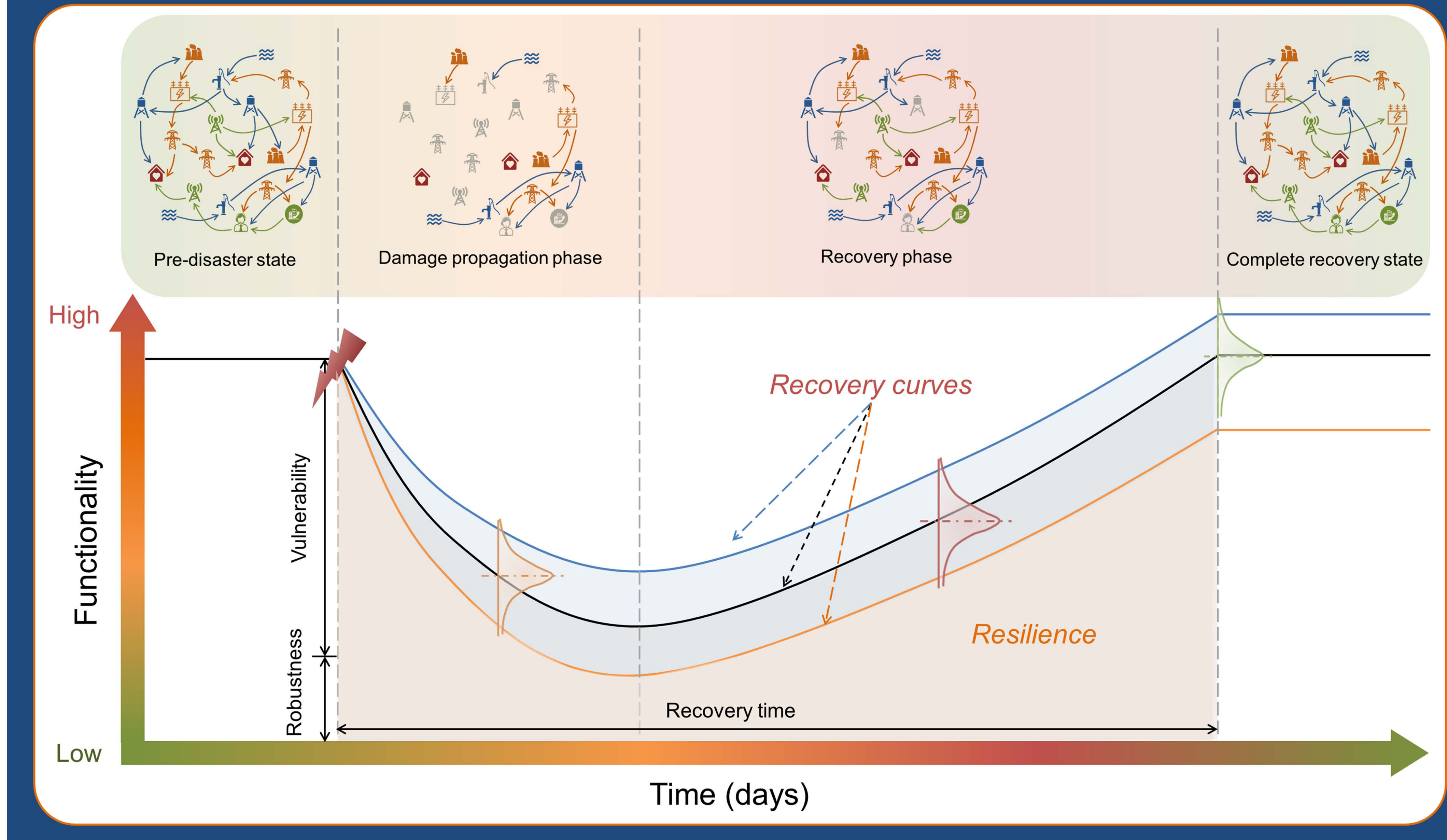


## Modeling the Damage and Recovery of Interdependent Critical Civil Infrastructure Systems



## Modeling the damage and recovery of interdependent critical civil infrastructure systems

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Natural and manmade hazards cause huge damages and economic losses each year. The interdependencies among critical civil infrastructure facilities would aggravate the initial damaged caused by the disasters and lead to cascading failures. Thus, modeling the damage and recovery of the civil infrastructure systems by considering the interdependencies is important to guide the pre-disaster hazard mitigation and post-disaster recovery planning. This research proposed a mathematical model to measure the functionality of each infrastructure facility, system and the integrated network over time following a disaster. The model considers the uncertainties in the modeling process due to the data availability issue. This model could be used to compare different infrastructure network designs based on the performance under a potential disaster, or could be used to compare different recovery plans giving limited resources and repair crews after a disaster to guide the community resilience planning.